

New Tillandsia Handbook
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To people that want to grow *Tillandsia*

Introduction

Regarding the present situation in Japan one has to consider several things before starting to grow *Tillandsia*. Many people, even planting specialists who are supposed to tell people how to grow plants, misunderstand or do not have enough knowledge about *Tillandsia*, and therefore there are rather rough guides for growing *Tillandsia*.

Since the previous version of this book was published 5 years ago, the situation has not changed. When we first imported *Tillandsia* to Japan, we may have emphasized too much, how easy it is - to grow these plants, as we wanted to spread *Tillandsia*. A catch copy "*Tillandsia* grows without any care" was widespread and there was a boom of *Tillandsia* as a living-room accessory. Many households ended up with mummified *Tillandsia* that had not been looked after as plants.

There is no plant that can grow without care. It is necessary to provide a suitable condition to grow even the easiest-to-take-care-of plants. Actually, usually I do not look after them at all. Only supply water when I have almost forgotten about them. I do sometimes remove dead leaves, or multiply them. I can get away with such fickle care, but it is only because we have suitable conditions for growing *Tillandsia*. In their natural habitat, they grow without any care. The most important thing is to provide growth conditions similar to their natural habitat.

I want to emphasize the following: *Tillandsia* species that are readily available in Japan are not always strong and easy-to-grow species. Flower shops usually import beautiful species that sell well. But it does not imply whether you can grow them easily. Plants germinate, make new leaves, flower, and reproduce by setting seeds; then repeat their own life cycle. You can say that you are growing plants when you see such a life cycle of plants.

Plants generally are sold when they are at their best looks, but this is not the case with *Tillandsia*. They are sold only at the starting point of growth. Following up from that, this book is aimed at introducing you to the real aspect of *Tillandsia*. We want you to make an effort to grow *Tillandsia* species in their best condition, and not only to keep them at the condition when you bought them. To this end, we put photos of flowering plants in this book.

In this edition, we describe the altitude of natural habitats as far as we know. This is quite useful information when you grow plants. Generally, plants growing at lower altitudes are easy to grow, - whereas plants growing at altitudes of 2,000 m, 3,000 m or higher, are easily damaged by high temperatures, and are difficult to take care of. Of course, altitude is not the only factor to take into account. However, it is still worth noting and treating the plants accordingly. Among the plants that we can buy in Japan, *T. velickiana* and *plumosa* grow at high altitudes, whereas *T. ionantha*, *streptophylla* and *stricta* grow at relatively low altitudes.

For your interest, I describe the plants that we have so far been unable to grow:

T. wagneriana, *lucida*, *macdougallii*, *imperialis*, *multicaulis*, *prodigiosa* and *dyeriana*.

Although all of these are beautiful and you may want to grow them, I recommend not trying these unless you have lots of experience. Apart from these species, we can

maintain plants for 3-5 years, so you can do that as well with certain efforts. Growth conditions, the most desirable thing for growing *Tillandsia* is a good airflow. This is the reason that *Tillandsia* plants are sometimes called air-plants. If you put them in a closed room or vinyl house with temperatures of 40 or 50 °C, even for 1 hour or half a day, they surely will be boiled and will decay. You should be aware that they couldn't live with cactuses, which prefer such conditions (photo 370).

If you still want *Tillandsia* to grow with succulent plants, it is good to choose a place that is cool in summer and warm in winter. There should be plenty of space between plants, and do not put too many plants in a small room. In spring and autumn, they prefer a bright place but covered from direct sunlight. Rain may bring trouble to your plants. An ideal condition is a glasshouse with only a roof but no walls during spring and autumn. The most important thing is to keep air flowing (photo-371).

In summer, it is better to cover plants 30-50 % from the sun in order to keep plants beautiful, as it prevents sun-tanning, excessive evaporation, and exhaustion of plants.

In winter, you can keep - the plants in good condition by keeping the temperature above 10° C. It is easy to grow them in winter because the air is dry. You do not have to care about airflow unless the temperature goes over 25° C. *Tillandsia* can live in a quite cold condition as long as it is dry, although they stop their growth completely in such conditions.

Watering

Tillandsia is generally quite resistant to dry conditions. In case of *T. cyanea*, one of most popular *Tillandsia* species -although it is generally recommended to water the leaves morning and evening, there would be no problem if you water them only once a week or even once in 10 days. If you want to grow different *Tillandsia* species in the same place, none of the plants will cause any trouble when you set the conditions to suit the plants that prefer the driest conditions amongst them, although some may grow a bit slowly. I can say, it is the most secure watering condition to water them every 10 days on a fine morning. However, in summer, when the sun is strong and temperatures go up quickly, it is better not to water the plants too much. Water steams the leaves and stems and severely damages your plants.

I grow my *Tillandsia* without extra shading as I grow them with other plants. In summer I hardly ever water directly. Instead, I wet the floor morning and evening to keep certain humidity in the air, and to prevent plants from drying out.

In September, when we have many severe days of rain, I water my plants well, let them absorb water, and then make them grow quickly. This was set up as a last resort because we could not change the natural conditions in Japan in September, but it is going better than expected.

Planting materials

1. For the species that prefer humid conditions, sphagnum mosses are ideal planting materials. *Tillandsia cyanea*, *leiboldiana*, *stricta*, *capitata*, *brachycaulos* and *geminiflora* etc. are examples of such species. In general, species that have soft - and thin leaves grow on sphagnum mosses without any problems. The pot size should be as big as its roots, and not necessarily any bigger. If you feel there is an unbalance between the aerial part and the pot, you can put the pot into a bigger pot (without transferring the plant) to prevent them from falling over.

2. Some popular *Tillandsia* species can be planted in pumices or barks. Species like *T. streptophylla*, *caput-medusae*, *seleriana*, *pruinosa* and *vernica*, will not grow well when hanged from tree branches because the humidity is not high enough. On the other hand, they grow quite well when they are just put in a pot. It could be because the pot or pumices absorb water, providing sufficient humidity to the plants.

3. Species that prefer a good airflow can be attached to a wooden surface or corkboard and hanged. Most silver-colored species, such as *Tillandsia ionantha*, *duratii* and *edithae*, belong to this group. You can use wires, fishing gut, pieces of stockings, or everything for tying up plants. You can even use an adhesive agent, if you do not need to move the plants anymore.

4. The species that prefer the driest condition grow well when you put them on a shelf in a glasshouse. If you tie them to a wooden surface, it causes too much humidity and therefore these plants would not grow beautifully. *Tillandsia albida*, *paleacea* and *tectorum*, which are popular due to their beauty, belong to this group. In general, for silver-colored species the less water the better plants will grow. However, it is true that they grow better with some planting materials than hanged from tree branches, even though they do not extend their roots in such condition. They seem to have more leaves and grow more beautifully. This is because the humidity is maintained for a longer time, but it also means more risk of decay. In case of plants that decay quite easily, you can keep them hanged from tree branches while keeping their meristem down to avoid accumulation of water.

Fertilizer management

In general, fertilizer management is effective on plants that grow in water (hydro-culture system). Plants that you can grow in hydro-culture are: Ananas, Guzmania, Aechmea. You grow them using liquid fertilizer like "Hyponex" during their growth phase. However, if you use liquid fertilizer to grow silver-coloured species, algae may grow on the leaves easily and make plants less attractive to see. Algae are likely to grow because of the high level of humidity in Japan.

Personally, I do not use any fertilizer when space is limited, because I am not in a hurry to grow them up. However I admit its importance (necessity). By contrast, Takizawa thinks it is better to use fertilizer. The use of fertilizer may depend on the purposes: growing plants or watching plants.

In conclusion, it is ideal that young plants can be grown with fertilizer and older plants are grown without, because of the purpose of watching them.

Disease

Tillandsia do not have any serious diseases. There are pathogenic insects, for example, slug and snail, which eat soft seedlings and scale insects, which suck their sap. Even when it is dry *Tillandsia* do not have any tick disease.

The most difficult plague is caused by scale insects. They live between the leaves inside growth points. So when you find this insect, they have already grown extensively within the plant. It is difficult to get rid of them completely, but you can immerse the small insect-infected plants into a pharmacological solution to solve this problem quickly. It is important to clean old dried leaves and flowers and watch the plants continuously to find the disease insects in time.

Breeding

Dividing a plant for replanting after flowering, the plant often has only a few shoots, which can be used to divide the plants. If your purpose is not breeding, you should not divide the plants too often, unless the plants are damaged. Unlike other plants that need to be cared and transferred every year, *Tillandsia* are very easy plants to manage in their growth.

Seeds

Naturally *Tillandsia* produces seeds easily and seedpods split open. These seeds can be carried and spread by the wind thanks to hairs on the seeds. Usually *Tillandsia* can self-pollinate, but it is not always easy to obtain the seeds when they are grown in culture, as seed setting might be limited. It is however better to try to get seeds. You should use new seeds; old seeds do not germinate well. This may be because the seeds need fresh air during storage. You may scarify seeds using chalk or vinyl net. Subsequently you immerse them in water after which you keep the seeds constantly moist. You can see germination of seed 1 week later. Seedlings must be watered everyday and kept under moist condition. Especially during the first year, seedlings are very small and they need to be treated carefully. You grow them in a cool place (definitely not too hot!) and allow fresh air to circulate. Also shield plants from strong light. Seedlings grow slowly. For a plant to flower, it takes usually four or five years, and in case of large species it takes more than 10 years.

My *T. pruinosa* has grown 8 years but still has not flowered. *Tillandsia seleriana* is as small as finger, even after 8 years of cultivation. Probably they do not grow fast because I do not use fertilizer. Remember that *Tillandsia* grow more slowly than cacti. Even difficult species can germinate spontaneously and grow large although very slowly. Difficult species are for example *Tillandsia variabilis*, *schiedeana*, *tricholepis*, *disticha*, *edithae*, etc. If you happen to have these seeds germinating, put them on a wooden surface. They will start growing and the roots will emerge. This is the easiest way to grow these plants. They still take a long time to grow.

Note: Most of the book, with its marvellous colour pictures, doesn't need any translation, because the name and habitat info has been included anyway. Some Japanese colleagues of a friend of mine have translated the part at the end of the book and I only made some corrections on it. I'm not sure all the text has been included because the last pages include some photos of expeditions and nothing has been said about that in the text.

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